North Dakota
Wellhead Protection

North Dakota State Department of Health
Division of Water Quality

Summer 2001 *Volume 9, Number 1*

Septic Systems in Wellhead Protection Areas

Individual sewage treatment systems, or septic systems, provide an effective means of treating and discharging wastewater in rural and suburban areas of North Dakota where community sewer systems are unavailable. The primary concerns with septic systems in wellhead protection areas involve proper installation and maintenance to prevent contamination of the public system's source water. This newsletter reviews the state rules that apply to septic systems.

A septic system consists of two parts: (1) a septic tank that separates and treats sewage solids and liquids (effluent), and (2) a soil absorption unit that treats and discharges effluent. A properly functioning septic system retains sewage solids in the septic tank, while the soil absorption unit uses the soil's natural porosity and filtering capacity to treat and discharge the effluent.

The North Dakota State Plumbing Code is the minimum statewide standard for siting, designing and installing septic systems. Local public health units providing environmental health services may have rules more stringent than the plumbing code and may have specific permitting or inspection requirements. The NDSU Extension Service has published bulletin AE-1156, which summarizes septic system oversight responsibilities for local health units. The bulletin is available from county extension offices or by visiting the extension service website at *www.ext.nodak.edu/extpubs/structur.htm*

Septic system issues in wellhead protection areas typically involve proximity to existing sanitary sewer systems and requirements for minimum lot size. The State Plumbing Code requires that sewage be discharged into a sewer system if the premises are within 200 feet of a sewer system. The minimum lot size for installation of a septic system is 40,000 square feet, or slightly less than one acre. The reason for the minimum lot size is two-fold. First, adequate space should be available on every lot for installation of a replacement soil absorption unit when needed. Second, larger lots decrease the density of septic systems, thereby reducing the amount of effluent discharged in a given area.

The State Plumbing Code sets minimum standards for evaluating the location of a septic system. Soil and ground water conditions should be evaluated to determine the size and type of system needed for a particular location. Setback requirements for water supply wells, surface water bodies and structures also should be assessed. All public water wells must be at least 100 feet from septic systems. Private water wells must be at least 50 feet from septic systems if they are more than 100 feet deep, and must be at least 100 feet from septic systems if they are less than 100 feet deep. Depending upon the proximity to a surface water intake, septic systems must be a minimum distance (measured horizontally) from the high water level in a reservoir or the banks of tributary streams. The septic system must be more than 200 feet from the high water level in a reservoir or the banks of tributary streams if a drinking water intake is within 3,000 feet downstream, while the septic system must be more than 100 feet from the high water level in a reservoir or the banks of tributary streams if a drinking water intake is more than 3,000 feet downstream.

The design and size of a household septic system depends upon site-specific soil and ground water conditions and the number of bedrooms in the house. Local public health units that may provide environmental health services should be consulted prior to designing and installing a septic system. They also can be consulted about problems with existing systems. The NDSU Extension Service has developed bulletin AE-892 that provides information about all aspects of septic system design. The bulletin is available from your county extension office or by visiting the extension service website at *www.ext.nodak.edu/extpubs/structur.htm*

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north dakota groundwater
a resource to protect

*(**Septic Systems**...cont. from front page)*

Septic systems should be identified in the contaminant source inventory of wellhead protection areas. Although properly functioning household septic systems generally do not degrade ground water quality, there are times when septic systems may pose a concern for public water systems. Shallow, unconfined aquifers overlain by sand and gravel are more susceptible to nitrate contamination from septic systems than are deep, confined aquifers. A public water system with a wellhead protection area located in an unconfined aquifer may therefore wish to enact management strategies for septic systems. These strategies could take the form of education and public awareness for septic system owners, or an ordinance requiring connection to a sanitary sewer system in the wellhead protection area.

Class V injection wells are regulated by the new Underground Injection Control (UIC) Program rules. Class V wells are usually septic systems or dry wells used to discharge a variety of fluids below the land surface. Household or small-volume septic systems that discharge only sanitary or household waste are not included in the Class V rules. The new rules have specific application for motor vehicle waste disposal systems located in wellhead or source water protection areas and sensitive groundwater areas. "Sensitive groundwater areas" are defined by the North Dakota Department of Health as aquifers or surficial sediments that may be vulnerable to contamination from motor vehicle waste disposal systems. These systems receive fluids from vehicular repair or maintenance activities and commonly have a shop floor drain that is connected to a dry well or septic system.

As of April 2000, new motor vehicle waste disposal systems are prohibited, and existing systems must be closed within one year of being identified within a wellhead or source water protection area. Motor vehicle waste disposal systems located in sensitive groundwater areas must close by Jan. 1, 2007. For a fact sheet and other information about the new UIC rules and sensitive groundwater areas, visit the health department's website at *www.health.state.nd.us/ndhd/environ/wq/gw* or call the department's Division of Water Quality at 701.328.5210.

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This newsletter is intended to inform North Dakota communities about the Wellhead Protection and Source Water Assessment programs. ***North Dakota Wellhead Protection*** is published by the North Dakota Department of Health, Division of Water Quality, 1200 Missouri Ave., Bismarck, N.D. 58504-5520.

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TDD 701.328.2068

This publication is available in alternative formats.

Printed on recycled paper.

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